

PENDING CLAIMS

1-28. (Cancelled)

29. (Previously Presented) An aircraft system comprising:
an airfoil having a spanwise portion, the spanwise portion having a plurality of spanwise locations; and
a leading edge device arrangement coupled to the spanwise portion, the leading edge device arrangement including at least a portion of at least one leading edge device, the at least one leading edge device in turn including at least a portion of a leading edge flap or leading edge slat, wherein a leading edge device chord length at each of the plurality of spanwise locations is at least approximately equal to the smallest leading edge device chord length required to provide a local maximum lift coefficient when the airfoil is operated at at least one selected design condition and a selected aircraft angle of attack.

30. (Withdrawn) The system of claim 29 wherein the leading edge device arrangement includes a plurality of leading edge devices, each leading edge device having an approximately constant chord length, and wherein the plurality of leading edge devices are arranged so that the approximately constant chord length of each leading edge device is at least approximately proportional to the smallest leading edge device chord length required to provide a local maximum lift coefficient at each of the plurality of spanwise locations when the airfoil is operated at the at least one selected design condition and the selected aircraft angle of attack.

31. (Original) The system of claim 29 wherein the leading edge device arrangement has at least two tapered portions, including:

a first tapered portion wherein the leading edge device chord length is tapered in a first spanwise direction; and

a second tapered portion wherein the leading edge device chord length is tapered in a second spanwise direction approximately opposite the first direction, the leading edge device chord length varying in a manner at least approximately the same as the manner in which the approximately smallest leading edge device chord length required to provide the local maximum lift coefficient varies across the spanwise portion.

32. (Original) The system of claim 29, further comprising an aircraft, the airfoil being coupled to the aircraft.

33. (Original) The system of claim 29 wherein the at least one selected design condition includes at least one of a physical characteristic of an aircraft, a dynamic characteristic of the aircraft, and a characteristic of an environment in which the aircraft operates.

34. (Original) The system of claim 29 wherein the at least one leading edge device is deployable, having a retracted position and at least one extended position.

35. (Previously Presented) An aircraft system comprising:

an airfoil having a spanwise portion, the spanwise portion having a plurality of spanwise locations; and

leading edge high lift means for increasing airfoil performance at high aircraft angles of attack positioned proximate to the spanwise portion wherein the leading edge high lift means includes at least a portion of a leading edge flap or a leading edge slat, and where in a high lift means chord length at each of the

plurality of spanwise locations is at least approximately proportional to an approximately smallest high lift means chord length required to provide a local maximum lift coefficient when the airfoil is operated at at least one selected design condition and a selected aircraft angle of attack.

36. (Original) The system of claim 35 wherein the leading edge high lift means includes at least one leading edge device having at least two tapered portions tapered in opposite spanwise directions.

37. (Original) The system of claim 35, further comprising an aircraft, the airfoil being coupled to the aircraft.

38. (Original) The system of claim 35 wherein the at least one selected design condition includes at least one of a physical characteristic of an aircraft, a dynamic characteristic of the aircraft, and a characteristic of an environment in which the aircraft operates.

39. (Cancelled)

40. (Withdrawn) The system of claim 41 wherein the leading edge device arrangement includes a plurality of leading edge devices, each leading edge device having an approximately constant chord length, and wherein the plurality of leading edge devices are arranged to be at least approximately proportional to the leading edge device chord length at each location determined to provide the selected lift coefficient distribution.

41. (Previously Presented) An aircraft system, comprising:
an airfoil having a spanwise portion, the spanwise portion having a plurality of spanwise locations; and

a leading edge device arrangement coupled to the spanwise portion, the leading edge device arrangement including at least a portion of at least one leading edge device, the at least one leading edge device in turn including at least a portion of a leading edge flap or leading edge slat, wherein a leading edge device chord length at each of the plurality of spanwise locations is at least approximately proportional to a leading edge device chord length at each location determined to provide a selected lift coefficient distribution when the airfoil is operated at at least one selected design condition and at least one selected aircraft angle of attack, wherein the leading edge device arrangement has at least two tapered portions, including:

a first tapered portion wherein the leading edge device chord length is tapered in a first spanwise direction; and

a second tapered portion wherein the leading edge device chord length is tapered in a second spanwise direction approximately opposite the first direction, the leading edge device chord length varying in a manner at least approximately the same as the manner in which the leading edge device chord length at each location determined to provide the selected lift coefficient distribution varies across the spanwise portion.

42. (Previously Presented) The system of claim 41, further comprising an aircraft, the airfoil being coupled to the aircraft.

43. (Previously Presented) The system of claim 41 wherein the at least one selected design condition includes at least one of a physical characteristic of an aircraft, a dynamic characteristic of the aircraft, and a characteristic of an environment in which the aircraft operates.

44. (Previously Presented) The system of claim 41 wherein the at least one leading edge device is deployable, having a retracted position and at least one extended position.

45. (Cancelled)

46. (Withdrawn) The system of claim 47 wherein the leading edge device arrangement includes a plurality of leading edge devices, each leading edge device having an approximately constant chord length, and wherein the plurality of leading edge devices have a combined distribution of chord lengths at least approximately proportional to the determined leading edge device chord lengths at each spanwise location.

47. (Previously Presented) An aircraft system, comprising:
an airfoil having a spanwise portion, the spanwise portion having a plurality of spanwise locations; and
a leading edge device arrangement coupled to the spanwise portion, the leading edge device arrangement including at least a portion of at least one leading edge device, the at least one leading edge device in turn including at least a portion of a leading edge flap or leading edge slat, wherein a leading edge device chord length at each of the plurality of spanwise locations is at least approximately proportional to a leading edge device chord length at each location determined to provide a selected spanwise distribution of aircraft angles of attack corresponding to local maximum lift coefficients when the airfoil is operated at at least one selected design condition, wherein the leading edge device arrangement has at least two tapered portions, including:
a first tapered portion wherein the leading edge device chord length is tapered in a first spanwise direction; and

a second tapered portion wherein the leading edge device chord length is tapered in a second spanwise direction approximately opposite the first spanwise direction, the first and second portions having a combined distribution of chord lengths at least approximately the same as the determined leading edge device chord lengths.

48. (Previously Presented) The system of claim 47, further comprising an aircraft, the airfoil being coupled to the aircraft.

49. (Previously Presented) The system of claim 47 wherein the at least one selected design condition includes at least one of a physical characteristic of an aircraft, a dynamic characteristic of the aircraft, and a characteristic of an environment in which the aircraft operates.

50. (Previously Presented) The system of claim 47 wherein the at least one leading edge device is deployable, having a retracted position and at least one extended position.